

PATENT COOPERATION TREATY

Frc 10
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/002667

International filing date (day/month/year)
21.06.2004

Priority date (day/month/year)
21.06.2003

International Patent Classification (IPC) or both national classification and IPC
E21B43/12, H02K15/03

Applicant
WEATHERFORD/LAMB, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/GB2004/002667

IAD 2004-01-21 PCT/PTC 21 DEC 2005

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

☐ paid additional fees.

☐ paid additional fees under protest.

☒ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

☐ complied with

☒ not complied with for the following reasons:

see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

☐ all parts.

☒ the parts relating to claims Nos. 1-9

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3
	No: Claims	1,2,4-9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

PCT/GB2004/002667

Re Item IV.

The separate inventions/groups of inventions are:

Claims 1-9

A method of pumping wellbore liquid with an electric submersible pump at more than 4500 rpm.

Claims 10-15,26-29

A permanent magnet motor with a retaining sleeve

Claims 17-25,30-32

A motor having a rotor and a stator

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

Document US 5.923.111 A discloses a method of pumping wellbore liquid by using an electric submersible pump and operating the pump at mote than 4500 rpm.

This document is used as reference to determine the different potential special technical features of each group of invention.

The potential special technical feature of the first invention is that the pump is driven by an AC synchronous permanent magnet motor. (in claim 3)

The objective problem solved is to provide a substantial power increase of a submersible pump.

The potential special technical feature of the second invention is a retaining sleeve (in claim 10)

The objective problem solved is to provide durable means of retention. (see description page 10 line 32-33)

The potential special technical feature of the third invention is that the carrier sleeve is a loose fit on the shaft and is supported on the shaft by support rings. (in claim 17)

The objective problem solved is to provide an improved method of assembling the rotor.
(see description page 16 line 1-22)

As the special technical features of inventions 1, 2 and 3 are not the same and are also not corresponding as they solve different problems, a technical relationship as required by rule 13(2) PCT is not present and therefore the requirements of unity of invention are not fulfilled.

Re Item V.

- 1 The following documents are referred to in this communication:
D1 : US 5 923 111 A (ENO JAMES JOSEPH ET AL) 13 July 1999
D2: US-B-6 388 3531 (LIU JOSEPH C ET AL) 14 May 2002

- 2 INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. Document D1 discloses (see fig. 1; column 1 line 13-42; the references in parenthesis applying to this document):

A method of pumping wellbore liquid, comprising the steps of:

- a) installing an electric submersible pump (10) in a wellbore; and
- b) operating the pump at more than 4500 rpm to pump the wellbore liquid.

D1 discloses a pump running speed up to 10000 rpm.

The subject-matter of claim 1 is therefore not new (Article 33(2) PCT).

- 3 DEPENDENT CLAIMS 2-9

Dependent claims 2-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT) for the following reasons:

Claim 2: D1 discloses the use of a permanent magnet motor (column 3 line 42).

Claim 3: D2 discloses an AC synchronous motor (see abstract)

Claim 4: D1 (column 1 line 13).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
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International application No.

PCT/GB2004/002667

Claims 5,6,9: Known features of an artificial lift system.

Claim 7,8: See claim 1.

4 Missing claim 16

As no claim 16 was submitted, claims 17-32 should be renumbered to 16-31.

See Rule 6.1(b) PCT.